

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF HUMAN GENETICS
DEPARTMENT OF UROLOGY
DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

Saher S. Hammoud, Ph.D., assistant professor of human genetics, Department of Human Genetics, assistant professor of urology, Department of Urology, and assistant professor of obstetrics and gynecology, Department of Obstetrics and Gynecology, Medical School, is recommended for promotion to associate professor of human genetics, with tenure, Department of Human Genetics, associate professor of urology, without tenure, Department of Urology, and associate professor of obstetrics and gynecology, without tenure, Department of Obstetrics and Gynecology, Medical School.

Academic Record:

Ph.D.	2011	University of Utah
B.S.	2005	Wayne State University

Professional Record:

2014 - present	Assistant Professor of Human Genetics, University of Michigan
2015 - present	Assistant Professor of Obstetrics and Gynecology, University of Michigan
2015 - present	Assistant Professor of Urology, University of Michigan

Summary of Evaluation:

Teaching: Dr. Hammoud has excelled as a teacher in both the classroom and the laboratory, and she has made significant contributions to the Medical School's educational mission. Since 2016, she has taught two lectures and one discussion section in a core curriculum course on molecular genetics. Dr. Hammoud has also consistently mentored students for a paper presentation course in the Department of Human Genetics and for a similar course in the Department of Cell and Molecular Biology Program. Each year, she delivers one lecture in at least three additional courses for the Medical School. Dr. Hammoud has trained seven doctoral students in her laboratory and each one has succeeded in directing an independent research project. She has also trained four post-doctoral fellows, two clinical fellows, one master's student, and seven undergraduates. Impressively, she has already completed the training of one Ph.D. student, who returned to medical school to complete her M.D., Ph.D. degree and two post-doctoral fellows, both of whom secured independent research investigator positions in academia. Dr. Hammoud has proven to be an effective educator and mentor of future scientists.

Research: Dr. Hammoud is quickly establishing herself as a leader in the field of germ cell development. She has been quite successful as an assistant professor at the University of Michigan and her major accomplishments include: 1) generating a comprehensive molecular atlas of the testis, which filled gaps in knowledge of the germ cell program and revealed novel cell types in the stromal compartment; 2) providing a comparative analysis of testis cell types and spermatogenesis, which uncovered species-specific germ cell states and signaling pathways; and

3) completing an unbiased scRNAseq analysis of infertile mice, which precisely defined the stage of arrest and uncovered a potential mechanism for germ cell dysregulation. As a result, she has published 10 manuscripts as an assistant professor including five as a corresponding author. Dr. Hammoud has secured a significant amount of external funding for her research, including an NIH innovator award, an R21 grant and R01 grant from the NICHD, and awards from Open Philanthropy and the Chan Zuckerberg Foundation. She has also received several accolades for her research accomplishments, including the Virendra B. Mahesh New Investigator Award from the Society for the Study of Reproduction.

Recent and Significant Publications:

Shen, Y, Shami, AN, Moritz, L, Larose, H, Manske, GL, Ma, QZ, Sukhwani, M, Czerwinski, M, Sultan, C, Clements, J, Spence, JR, Orwig, KE, Tallquist, M, Li, JZ, Hammoud, SS: Tcf21+ mesenchymal cells contribute to testis somatic cell development, homeostasis, and regeneration. In press at *Nature Communications*, 2021.

Shami, AN, Zheng, X, Munyoki, SK, Ma, QZ, Green, CD, Sukhwani, M, Orwig, KE, Li, JZ, Hammoud, SS: Single-cell RNA sequencing of human, macaque, and mouse testes uncovers conserved and divergent features of mammalian spermatogenesis. *Developmental Cell*, 2020.

Larose, H, Kent, T, Ma, QZ, Shami, AN, Harerimana, N, Li, JZ, Hammoud, SS, Handel MA: Regulation of meiotic progression by Sertoli-cell androgen signaling. *Molecular Biology of the Cell*, 2020.

Green, CD, Ma, QZ, Manske, GL, Shami, AN, Zheng, X, Marini, S, Moritz, L, Sultan, C, Gurczynski, SJ, Moore, BB, Tallquist, MD, Li, JZ, Hammoud, SS: A comprehensive roadmap of murine spermatogenesis defined by single-cell RNAseq. *Developmental Cell*, 2018.

Hammoud, SS, Low, DH, Yi, C, Lee, CL, Oatley, JM, Payne, CJ, Carrell, DT, Guccione, E, Cairns, BR: Transcription and imprinting dynamics in developing postnatal male germline stem cells. *Genes & Development*, 2015.

Service: Dr. Hammoud has an excellent record of service for her departments, the university, and the greater scientific community. She has served on several critical departmental committees, including the Ph.D. Program Committee. She has served on multiple search committees for the university and on admissions committees for human genetics and the cell and molecular biology program. Dr. Hammoud has been an ad hoc review for the NIH and several top journals, including *Cell*, and *Nature Genetics*, and is a member of the NIH Molecular and Integrative Reproduction Study Section. She is an editorial board member of *Developmental Cell* and is active in reproductive biology societies. She has served on 15 thesis committees, in addition to those for her own students. Dr. Hammoud is an outstanding citizen that makes numerous contributions to her departments, the university, and the scientific community.

External Reviewers:

Reviewer A: "...her work has continued to be fearless, high profile and paradigm shifting. Given the quality of her work, funding, service and standing in the community, Dr. Hammoud's promotion should be quite a straightforward decision. Although I don't like to answer the question

of whether ‘the candidate would be granted tenure at my institution’ given the differences in job expectations at various institutions, I am confident that she would be easily promoted to Associate Professor with tenure at [my institution].”

Reviewer B: “Her most outstanding works involve the single cell characterization of the various germline population in the postnatal testis of mice, which she successfully leveraged into identifying the conserved and divergent transcriptional programs that drive germ cell development in mice, human and nonhuman primates... This innovative work creates an important benchmark for characterizing the growth of germline cells in culture and potential clinical applications of testis tissue organ cultures as an approach to produce sperm for therapeutic purposes... She is amongst the best (if not the best) of the other peer investigators who are performing these experiments in the mammalian testis.”

Reviewer C: “...I enthusiastically support her promotion. She is off to a superb start and it is clear that she is going to continue to impress. I doubt I’m alone in thinking that you are lucky to have her as a colleague... Her CV reports 10 papers published since she started her own lab, all of which are rigorous studies that have substantially moved their respective fields forward. This is a strong track record of productivity. She has been highly successful in securing funding. She also appears highly successful at mentorship: the impressive number of fellowships for her mentees reported in the CV supports the conclusion that she is attracting talented [junior] researchers to her group and giving them the tools they need to succeed... Sue is a rising star and I look forward to seeing where her research leads her next.”

Reviewer D: “Dr. Hammoud has been honored many times over for her work at the institutional level and the national level, has been a member of study sections and committees, and has held administrative roles at the institutional, national, and international level, indicating that she is interested in sharing her knowledge and skills with the larger scientific community... Dr. Hammoud is a talented scientist and educator and is worthy of your support to be promoted to Associate Professor with tenure in the Department of Human Genetics and to be promoted to Associate Professor in the Department of OB/Gyn and Department of Urology.”

Reviewer E: “It is also important to note that Dr. Hammoud is not shooting for small papers but instead is publishing comprehensive studies in major journals like Developmental Cell. This type of work takes time, especially in the mouse system, making the productivity of the lab even more impressive... She already has a strong track record of obtaining funding for her work, both from NIH and other sources. She has been very successful in recruiting students and post docs to her group. She is already garnering an impressive degree of international recognition and speaking invitations. All of these signs are pointing in the same, very positive, direction.”

Reviewer F: “First, her clear and thoughtful review articles bring new ideas to the field. Second, she applies her scRNA expertise to other important questions through collaborations, such as one that dissected effects of lead-exposure on gene expression patterns in the mouse brain. Third, her clear talks at meetings present her exciting data in ways that stimulate discussion and thought... Dr. Hammoud is a real star, doing very important and creative work of the highest quality. She is very highly respected in the field, justifiably.”

Summary of Recommendation:

Dr. Hammoud has made major contributions to the Departments of Human Genetics, Obstetrics and Gynecology, and Urology through her research, teaching, and service. Her research program addresses key questions in germ cell development and her findings have implications for foundational knowledge and clinical care. I am pleased to recommend the promotion of Saher S. Hammoud, Ph.D. to associate professor of human genetics, with tenure, Department of Human Genetics, associate professor of obstetrics and gynecology, without tenure, Department of Obstetrics and Gynecology, and associate professor of urology, without tenure, Department of Urology, Medical School.



Marschall S. Runge, M.D., Ph.D.
Executive Vice President of Medical Affairs
Dean, Medical School

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